

PHI - Cross flange block - Sp Nov. 201

Work Order ID 125608

\*125608\*

October-17-14 10:17:26 AM

Page 1

Item ID: D407-667-105PHI

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Item Name: Fwd Crosstube - High 407

Stop \*NS2\*

Start Date: 10/16/14 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 11/07/14 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start \*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr

Revision Nbr

D407-667-145

Rev C (DEO)

DSI9565

A

DSI9628

A

100

Document Control

0.00

\*100\*

DC

DOCUMENT CONTROL

Memo

0.00

Doc.Control -USB or Paperwork

Photocopy bluefile and create labels as per PPP D407-667-105 CHG005

DAS  
05  
9-89

NOV 21 2014

110

\*110\*

Packaging

Packaging

0.00

Memo

0.00

Packaging

NW 14-11-12

**Work Order ID 125608**

October-17-14 10:17:26 AM

**\*125608\***

Page 2

Item ID: D407-667-105PHI

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Fwd Crosstube - High 407

Start Date: 10/16/14 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 11/07/14 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

120

0.00

**\*120\***

BENDING MACHINE - CROSSTUBES

CNC Bend 2

Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D407-667-145 using CNC bender program 407-fw

JW 14-11-12

130

QC15- Crosstube Dimensional Check

0.00

**\*130\***

QC

Memo

0.00

Quality Control

1 DAS  
38  
9-89

11-11-12



# Work Order ID 125608

\*125608\*

Page 3

Item ID: D407-667-105PHI

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Item Name: Fwd Crosstube - High 407

Stop \*NS2\*

Start Date: 10/16/14 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 11/07/14 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start \*NR1\*

Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
140	Crosstubes	0.00							
*140*	Crosstubes								
Crosstubes	<p>Memo</p> <p>***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING***** VERIFIED BY: <u>mmk</u> *****</p> <p>1- Drill holes &amp; ream using drill Jig DT8541 &amp; DT8542 as per Dwg D407-667-145. Drill all (3) top holes. Holes facing inboard.</p> <p>***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING***** VERIFIED BY: <u>mmk</u> *****</p> <p>2- Drill Fwd rivet holes using drill Jig DT8787 fwd as per Dwg D407-667-145. Note: Fwd side has 3x top holes. Facing inboard.</p> <p>3- C'sink holes as per Dwg D407-667-145. Allow rivet to sit below surface to compensate for paint.</p> <p>4- Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins. Drill ONLY 2 top holes ONLY plug most bottom holes to prevent accidental drilling.</p> <p>***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING***** VERIFIED BY: <u>mmk</u> *****</p> <p>5- Drill holes and ream using drill Jig DT8541 &amp; DT8542 as per Dwg D407-667-145. Drill only the top (2) holes.</p> <p>***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING***** VERIFIED BY: <u>mmk</u> *****</p>	0.00							

B2/KW 14/11/13

**Work Order ID 125608**

October-17-14 10:17:26 AM

**\*125608\***

Page 4

Item ID: D407-667-105PHI

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Fwd Crosstube - High 407

Start Date: 10/16/14 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 11/07/14 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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6- Drill Aft rivet holes using drill Jig DT8787 aft as per Dwg D407-667-145.

7- C'sink holes as per Dwg D407-667-145. Allow rivet to sit below surface to compensate for paint.

8- Scribe part # and batch # using vibrating stylus as per Dwg D407-667-145 Inside of Cuff (Do not engrave on outside of tube)

9- \*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\* Deburr &amp; Inspect for surface damage. Repair damage within limits as per Dwg D407-667-145

BL/10W

14/11/14

150

QC5- Inspect part completeness to step on W/O 0.00

**\*150\***

QC

Memo 0.00

Quality Control

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

160

0.00

**\*160\***

HandFXtube

Memo 0.00

Hand Finishing Crosstubes

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

1-CLEAN CROSSTUBE WITH WASH'N WIPE

DAS

49

9-80

14/11/13

DAS

41

9-89

14-11-13

**Work Order ID 125608**

October-17-14 10:17:26 AM

**\*125608\***

Page 5

Item ID: D407-667-105PHI

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Item Name: Fwd Crosstube - High 407

Stop **\*NS2\***

Start Date: 10/16/14 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 11/07/14 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

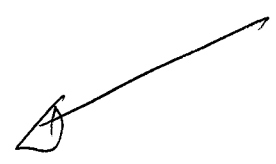
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180	Outsource process - NDT per QSI038 4.1	0.00							
<b>*180*</b>									
Outsource2	Memo	0.00							
Outsource process - NDT	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	OUTSIDE SERVICE -CROSSTUBES								
	Liquid Penetrant Inspection as per QSI 038 Or								
	Issue P/O: <u>26513</u> PI as per ASTM 1417								
	Level 2 Attach copy of NDT results to work order								
190		0.00							
<b>*190*</b>									
Packaging	Packaging								
Packaging	Memo	0.00							
Packaging	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	Inspect for transit damage								
	Ensure copy of NDT results attached to work order.								
200	QC5- Inspect part completeness to step on W/O	0.00							
<b>*200*</b>									
QC	Memo	0.00							
Quality Control	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	Inspect for damage & ensure results are as per Dwg D206-667-145								

CZ 10/11/14 ①

1x SP14-11-14



1 DAS 38 9-89

NOV 21 2014

# Work Order ID 125608

October-17-14 10:17:26 AM

**\*125608\***

Page 6

Item ID: D407-667-105PHI

Accept

**\*N900040100\***

Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Fwd Crosstube - High 407

Start Date: 10/16/14 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 11/07/14 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
204		0.00							DAS
<b>*204*</b>									41
HandFXtube	Memo	0.00							9-89
Hand Finishing Crosstubes	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								14-11-15
	1- PRESSURE WASH AND THEN USE WASH'N WIPE TO CLEAN CROSSTUBE BEFORE CHEMICAL CONVERSION								
206	QC7-Inspect Chemical Conversion Coat	0.00							
<b>*206*</b>									DAS
QC	Memo	0.00							48
Quality Control	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								9-89

14/11/15

**Work Order ID 125608**

October-17-14 10:17:26 AM

**\*125608\***

Page 7

Item ID: D407-667-105PHI

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Fwd Crosstube - High 407

Start Date: 10/16/14 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 11/07/14 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210	SprayPaint	0.00							DAS
<b>*210*</b>									<b>41</b>
SprayPaint	Memo	0.00							<b>9-89</b>
Spray Painting	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								14-11-16
	***MASK AREA PRIOR TO PAINTING AS PER DWG AND DEO***								
	1-Prime inside and outside crosstube as per QSI 005								
	USE : PRC Desoto Primer 515X349 (Boeing Spec BMS 10-79 Type III Class A Grade A)								
	2-SPRAY PAINT PER QSI005								
	USE: CA 8213/F37038 CAMOFLAGE								
	BLACK - MIL-PRF-05285E, TYPE 1, CLASS H								
	PRIME BATCH: <u>128975</u>								
	Start Time: <u>1230</u>								
	Finish Time: <u>1:00</u>								
	PAINT BATCH: <u>130804</u>								
	Start Time: <u>4:00</u>								
	Finish Time: <u>4:45</u>								



**\*1 25608\***

Page 8

**\*N900040100\***

**Setup Start \*NS1\***

Stop \*NS2\*

**Start Date:** 10/16/14      **Start Qty:** 1.00      **\*1\***

**Required Date:** 11/07/14      **Req'd Qty:** 1.00      **\*1\***

**Customer:**

Approvals: \_\_\_\_\_ Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start \*NR1\*

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop **\*NR2\***

[illegible]

220

### QC14- Inspect Spray Paint

0.00

**\*220\***

QC

## Memo

0.00

## Quality Control

Then, Wrap in plastic bag to protect from scratches

38  
9-89

14-11-18

**Work Order ID 125608**

October-17-14 10:17:26 AM

**\*125608\***

Page 9

Item ID: D407-667-105PHI

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Fwd Crosstube - High 407

Start Date: 10/16/14 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 11/07/14 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230		0.00							
<b>*230*</b>	Crosstubes								DAS
Crosstubes	Memo	0.00							41
Crosstubes									<del>9-89</del>
	INSTALL GROUNDING CLAMP AND SEAL WITH SIKAFLEX AS PER DWG AND DEO A/R SIKAFLEX BATCH: _____								14-11-17
	1-Abrade mating surfaces of support and crosstube with 180 grit sandpaper, clean the area with MEK or equivalent as per dwg								
	2-Install supports with Proseal 890 per D407-667-145 (DEO) and QSI 015 A/R Proseal 890 Batch: <u>130090</u> EXP: <u>1/15</u>								
	3-Install supports clamps Using Dt9565 as per Dwg D407-667-145 (DEO), Torque to 80-100 IN-LBS. PROSEAL CURE TIME 72 HOURS: Start: <u>14-11-17</u> Finish: <u>14-11-20</u>								
	4-Install nut plates as per Dwg D407-667-145. Touch-up rivet heads with Imron paint.								

# Work Order ID 125608

\*125608\*

Page 10

October-17-14 10:17:26 AM

Item ID: D407-667-105PHI Accept \*N900040100\* Setup Start \*NS1\*  
 Revision ID: Stop \*NS2\*  
 Item Name: Fwd Crosstube - High 407  
 Start Date: 10/16/14 Start Qty: 1.00 \*1\* Cust Item ID:  
 Required Date: 11/07/14 Req'd Qty: 1.00 \*1\* Customer:  
 Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start \*NR1\*  
 QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
240	QC5- Inspect part completeness to step on W/O	0.00							DAS 36 9-89
*240*									
QC	Memo	0.00							
Quality Control	***RE-CHECK TORCQUE ON CLAMP AFTER PROSEAL HAS CURED FOR 72HOURS AS PER DWG.***  ***VERIFY RESISTANCE AS PER NOTE 18 AND DWG DEO***								14-11-19
250	Pick Kit	0.00							
*250*									
Packaging	Memo	0.00							14/11/21
Packaging									
260	QC4- 100% Inspect kits for completeness	0.00							
*260*									
QC	Memo	0.00							
Quality Control									NOV 21 2014

DAS  
86  
9-89

**Work Order ID 125608**

October-17-14 10:17:26 AM

**\*125608\***

Page 11

Item ID: D407-667-105PHI

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Fwd Crosstube - High 407

Start Date: 10/16/14 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 11/07/14 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270	Packaging	0.00							
<b>*270*</b>									
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPP D407-667-105								
	Location: <u>Box</u>								
	PPP Rev: _____								
280	QC21- Final Inspection - Work Order Release	0.00							
<b>*280*</b>									
QC	Memo	0.00							
Quality Control									

DAS  
46  
9-89DAS  
06  
9-89

NOV 21 2014

14/11/21

me  
14-11-21

# Picklist Print

October-17-14 10:17:24 AM

Page 1

Work Order ID: 125608

**\*125608\***

Parent Item: D407-667-105PHI

**\*D407-667-105PHI\***

Parent Item Name: Fwd Crosstube - High 407

Start Date: 10/16/14

Required Date: 11/07/14

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A 14.09.24 NEW ISSUE II VERF:DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

AN5-32A		Purchased	No			250	Each	255.0000	4	4			
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**\*AN5-32A\***

Bolt

**\*\***

SP

DAS  
06  
9-89

Location

Loc Qty

Loc Code

ST336

255

124215

80

m127363

4

m128403

66

m128634

105

Each

13.0000

1

**\*\***

CR 14-11-18

D206-667-017

Manufactured

No

**\*D206-667-017\***

Ground Strap Installation

Location

Loc Qty

Loc Code

FG

2

102581

2

LG050

7

107968

5

97504

2

LG054

4

125463

4

110

Each

2.0000

1

1

**\*\***

D407-667-105TRN

Manufactured

No

**\*D407-667-105TRN\***

Crosstube Turning Detail

Location

Loc Qty

Loc Code

LG014

2

116476

1

120869

1

① JW 14-11-12

# Picklist Print

October-17-14 10:17:24 AM

Page 2

Work Order ID: 125608

**\*125608\***

Parent Item: D407-667-105PHI

**\*D407-667-105PHI\***

Parent Item Name: Fwd Crosstube - High 407

Start Date: 10/16/14

Required Date: 11/07/14

Start Qty: 1.00

Required Qty: 1.00

D2873-043

Manufactured No

230 Each

34.0000

2

2

DAS

41

9-89

14-11-15

**\*D2873-043\***

Nut Plate Assembly

Location

Loc Qty

Loc Code

LG052

34

107964

4

113050

22

114550

8

D2873-045

Manufactured No

230 Each

37.0000

2

2

DAS

41

9-89

14-11-15

**\*D2873-045\***

Nut Plate Assembly

Location

Loc Qty

Loc Code

LG052

37

113144

7

113886

30

D2891-1

Manufactured No

230 Each

30.0000

2

2

DAS

41

9-89

14-11-17

**\*D2891-1\***

Support 2.25

Location

Loc Qty

Loc Code

FG

2

84164

2

LG014

18

113044

1

114948

17

LG052

10

120972

10

October-17-14 10:17:25 AM

Shop Packet Print

Page 2

# Picklist Print

October-17-14 10:17:25 AM

Page 3

Work Order ID: 125608

Parent Item: D407-667-105PHI

Parent Item Name: Fwd Crosstube - High 407

**\*125608\***

**\*D407-667-105PHI\***

Start Date: 10/16/14

Required Date: 11/07/14

Start Qty: 1.00

Required Qty: 1.00

D3595-063-395

Manufactured No

230 Each

205.0000

4 4

**\*D3595-063-395\***

Rubber Cushion

**\*\***

DAS

41

9-89

14-11-17

Location

Loc Qty

Loc Code

FG

5

87353

5

LG051

200

110958

6

115027

100

115737

94

4

MS21920-20

Purchased

No

Each

215.0000

4

**\*MS21920-20\***

Clamp

**\*\***

DAS

41

9-89

14-11-17

Location

Loc Qty

Loc Code

FG

2

122254

2

LG050

213

m126266

1

m127225

4

m128429

1

m128650

207

4

MS20601-AD4W10

Purchased

No

230

Each

465.0000

14

14

**\*MS20601-AD4W10\***

RIVET

**\*\***

DAS

41

9-89

14-11-15

Location

Loc Qty

Loc Code

LG050

432

M127301

30

M127578

2

M128594

100

M128701

300

LG051

33

M128718

33

3

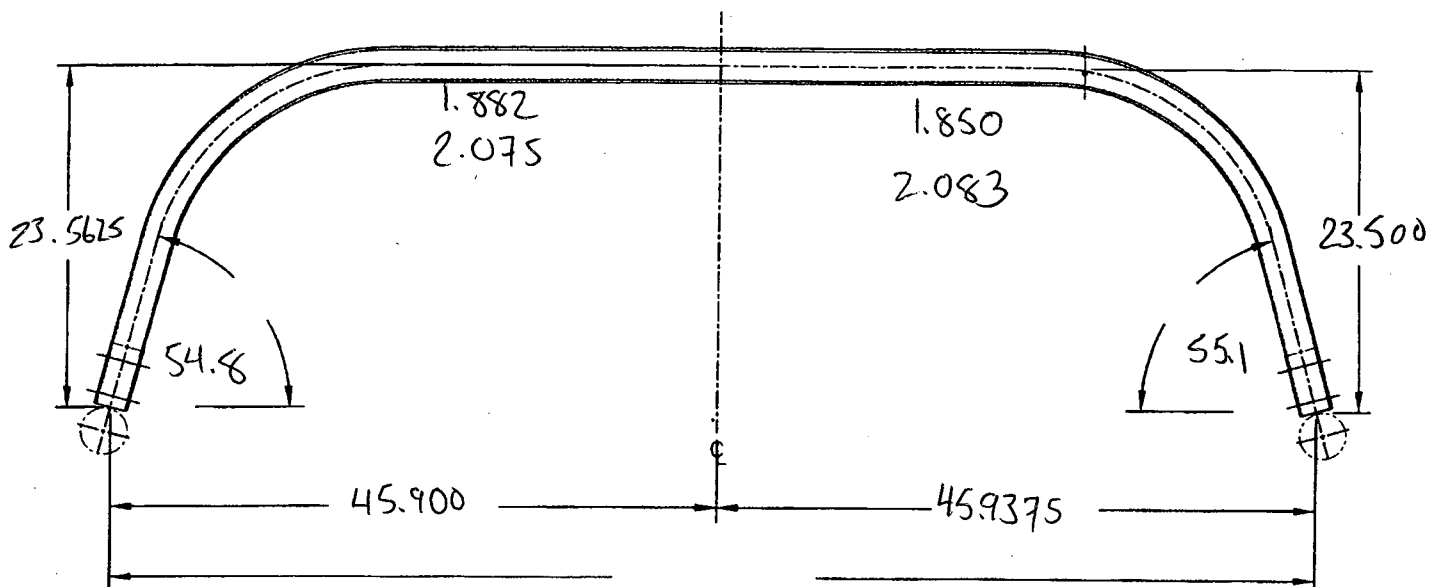
October-17-14 10:17:25 AM

Shop Packet Print

Page 3

<b>DART AEROSPACE LTD</b>		<b>Work Order:</b>	125608
<b>Description:</b> Crosstube High Fwd (407)		<b>Part Number:</b>	D407-667-105
<b>Inspection Dwg:</b> D407-667-145	<b>Rev:</b> C	<b>Page 1 of 1</b>	

Required Dimension	Min	Max
Height	23.41	23.67
1/2 Span	45.81	46.07
Angle	54	56
Total Span	91.62	92.14
Bending Passes	6	--
Crushing	--	6%



	Side A	Side B
Bending Passes	16	16
Crushing	4.9%	5.9%
Comments		

DAS  
38  
9-89

QC15 Inspection	
Date	

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	09.11.12	Dimensions updated per Dwg Rev C	KJ	
C	12.04.16	Added bending, crushing dimensions	KJ	
D	12.10.30	Revised Total Span dimensions & Dwg Rev	KJ	



125600

Item	Qty -145	Part Number	Description
1	X	D407-667-145	CROSSTUBE ASSEMBLY (407 HIGH FWD)
2	1	D6010-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2891-1	SUPPORT
6	4	D3595-063-395	RUBBER CUSHION
7	4	MS21920-20	CLAMP (OR MS21920-21)
8	14	MS20601AD4W10	RIVET (OR NAS9302B-4-10)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299- 947-100, TYPE II, CLASS 2 ADHESIVE)

# **GENERAL NOTES:**

- 1) MATERIAL: MANUFACTURED FROM D6010-115  
FINISHED LENGTH = 113.20±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D407-667-145" AND BATCH NUMBER ON  
INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 17.8 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY,  
TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE  
TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER  
QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE  
THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS  
ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE  
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS  
SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT  
LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN  
SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

**DEO ATTACHED**

ECW #11-615  
11.07.26

**UNDER REVIEW**

**RELEASED**  
03/11/12

C	REVISE GENERAL NOTES/PART LIST (ZN D7-1); REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. D3595-063-395 WAS D2856-400-694 (ZN D6-2 & A5-2); REMOVED REF. 7 ADD TOLERANCES (ZN C6-3, C4-3, D2-3); RELOCATED FLAG #6 (ZN A8-3) PER NCR 210; MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	08.11.06
B	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKUDTUBES	PH	05.07.26
A	NEW ISSUE	CP	02.05.08
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF	DRAWING NO.	REV. C
CHECKED	RF	D407-667-145	SHEET 1 OF 4
MFG. APPR.	RF	TITLE	SCALE
APPROVED	RF	CROSSTUBE ASSY (407 HIGH FWD)	NTS
DE APPR.	RF	COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	
DATE	08.11.06		



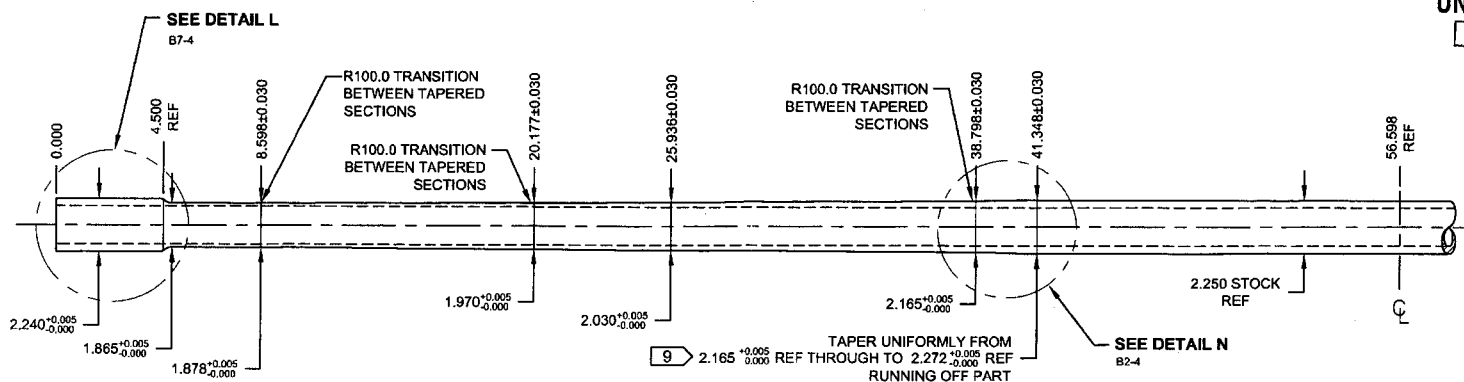


**UNDER REVIEW**

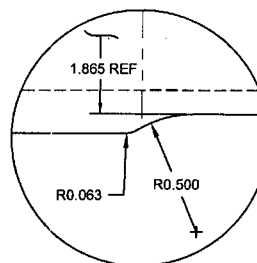
08/11/06

600 11.615

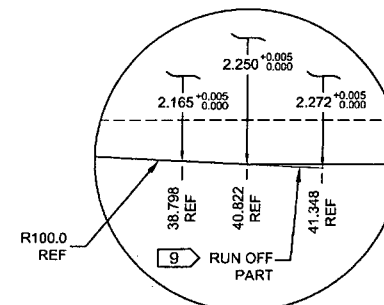
11.07.26



**TURNING DETAIL**



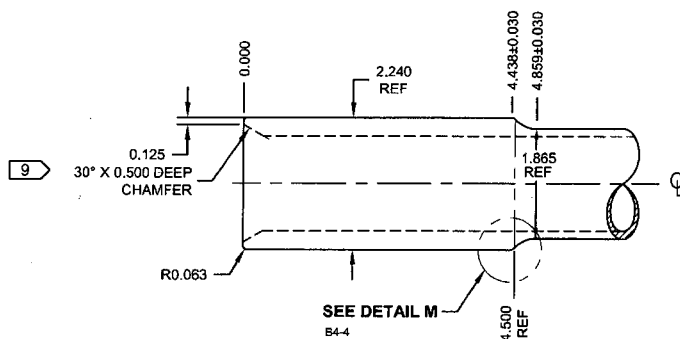
**DETAIL M:  
CUFF TRANSITION**  
D6-4 NOT TO SCALE



**DETAIL N:  
TAPER RUN-OFF**  
C3-4 NOT TO SCALE

**DEO ATTACHED**

**RELEASED**  
08/11/06



**DETAIL L:  
CROSSTUBE CUFF**  
D7-4 NOT TO SCALE

DESIGN	9	<b>DART AEROSPACE LTD</b>
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA
CHECKED	CP	DRAWING NO. REV. C
MFG. APPR.	CP	D407-667-145 SHEET 4 OF 4
APPROVED	CP	TITLE SCALE
DE APPR.	CP	CROSSTUBE ASS'Y (407 HIGH FWD) NTS
DATE	08.11.06	COPYRIGHT © 2002 BY DART AEROSPACE LTD
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DRAWING NO. D407-667-145	TITLE CROSSTUBE ASS'Y (407 HIGH FWD)	REV. C	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D407-667-145-C-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>qp</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>IB</i>	APPROVED <i>WD</i>		DE APPR. <i>HB</i>		
DATE 11.07.15	DATE 11.07.22	DATE 11.07.22	DATE 11/07/22		DATE 11.07.21		

**PURPOSE:**

REPLACE MAGNOBOND WITH PROSEAL.

**CHANGE:**

IS:

Item	Qty -145	Part Number	Description
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
---	-----	----------------	---

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2891-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

**RELEASED**  
2011-07-28  
*W*

DRAWING NO. D407-667-145	TITLE CROSSTUBE ASS'Y (407 HIGH FWD)	REV. C	<b>DART AEROSPACE LTD ENGINEERING ORDER</b>	D.E.O. NO. D407-667-145-C-2	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN AJS	CHECKED <i>[Signature]</i>	MFG. APPR. <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DE APPR. <i>[Signature]</i>		
DATE 12.08.02	DATE 12.08.02	DATE 12.08.02	DATE 12.08.02	DATE 12.08.02	DATE 12.08.02	

**PURPOSE:**

ADD ELECTRICAL GROUNDING STRAP

**CHANGE:**

ITEM	QTY -145	PART NUMBER	DESCRIPTION
1	X	D407-667-145	CROSSTUBE ASSEMBLY (407 HIGH FWD)
10	2	AN742D36	CLAMP
11	2	MS9165-05	ANGLE BRACKET
12	2	MS21042L3	NUT (OR MS21042-3)
13	2	MS27039-1-08	SCREW
14	4	NAS1149C0332R	WASHER (OR AN960C10L)

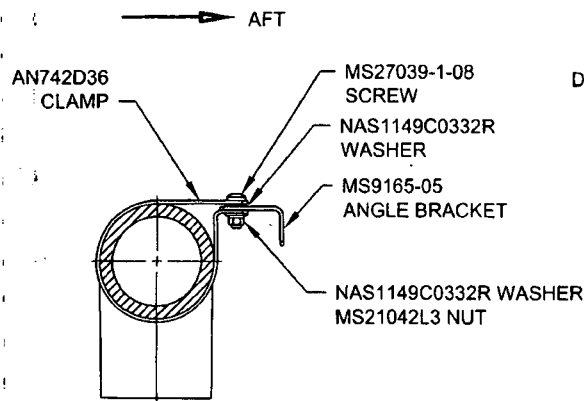
ADD

**GENERAL NOTES:**

- 16) MASK AREA UNDER CLAMP PRIOR TO PAINTING
- 17) SEAL EDGES WHERE AN742D36 CLAMP MEETS WITH THE CROSSTUBE USING SIKAFLEX-241/-291 OR MIL-S-8802 CLASS B2 OR PROSEAL 890 SEALANT
- 18) PERFORM RESISTANCE CHECK TO ENSURE MAX RESISTANCE IS 10 MILLIOHMS

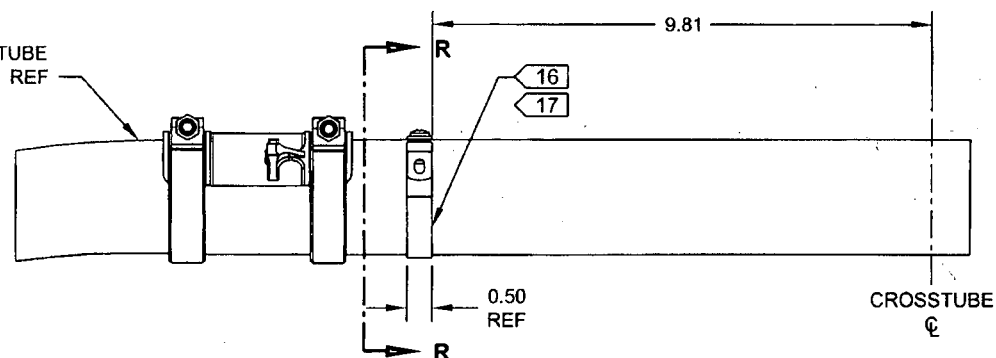
ADD

**RELEASED**  
CP 12.08.17  
ECN 12-631



**SECTION R-R**

D407-667-505 CROSSTUBE REF



**DETAIL P**  
BONDING STRAP INSTALLATION 2 PL

## 407-667-105 Folio

### Setup

Use 1.6" spacers under 2.25 rollers

2.935" (2.875 + one .060 shim) for SA,, 2.995 (2.875 + two .060) shims for SB Spacer in buggy on large table/adjust supporting rollers as required.

19.25", **36.4" RED** from cuff, centerline is @ 56.6

### LARGE TABLE

Run programs 407f 01-07 without stopping going down the taper, **36.4" line**, approaches are Y<sup>W</sup> 1750/3200  
3200 and W 1750. CHECK

Then run programs 407f 10-16 without stopping from **19.25" line**. "CHECK" approaches are Y 3500 and W 3200 for all programs running up taper, . Programs 17 and up are to finish tube off if necessary. CHECK between each program.. **Large table** 3200/3500

in order to reduce the height, increase cuff angle at program 7. tubes are still finishing too high. jw  
11-08-26

- update: increased power on step 9 of prog 7 by 20 points. tubes are finishing at prog 19.  
height fixed.

12-08-01 after program 7 on both tubes, side "B" had bent in substantially more than side "A".  
approximately 4" more than the first side. tubes both turned out okay, but were watched closely on  
the second side.

13-02-14 Bent 2 as per folio.. (1-7 CHECK.. 10-16 CHECK).. ran 17, 18, 19, 20... checking between  
each, 1st tube finished on 20, 2nd finished on 19..... (run 18a if really close to finished tangent  
line) MO

<del>1</del>	1
<del>2</del>	2
<del>3</del>	3
<del>4</del>	4
<del>5</del>	5
<del>6</del>	6
<del>7</del>	7
10	10
12	12
14	14
15	15
16	16



Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

## PURCHASE ORDER

Purchase Order ID **PO26513**

Purchase Order Date 11/14/2014

PO Print Date 11/14/2014

Page Number 1 of 2

**Order From :**

VC-SKY001

SKYSERVICE  
6120 MIDFIELD ROAD  
MISSISSAUGA, ONTARIO L5P 1B1  
CANADA

**Ship To :** DART AEROSPACE LTD

1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

**Contact Name**

**Vendor Phone** 905-678-5636

**Ship To Contact**

**Ship To Phone**

**Ship Via:** Delivered

**Ship Acct:**

**Buyer**

Chantal Lavoie

**Customer POID**

**Customer Tax #**

10127-2607

**Terms**

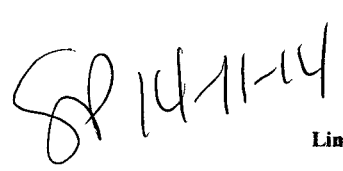
Net 30

**Currency**

CAD

**FOB**

FCA - (Free Carrier)

Line Nbr	Reference Vendor Part Number Line Comments Delivery Comments	Description/ Mfg ID	Req Date/ Taxable Promise Date	CD	Req Qty/ Unit of Measure	PO Unit Price	Extend Pri
1	125608	D407-667-105PHI CROSSTUBE	11/14/2014 Yes 11/14/2014		1.00 ✓	\$208.33	\$208.
	LIQUID PENETRANT INSPECTION AS PER QSI 038 OR LPI AS PER ASTM 1417 LEVEL 2						
							
	<b>Line Total:</b>						<b>\$208.</b>
2	125609	D407-667-205PHI CROOSTUBE	11/14/2014 Yes 11/14/2014		0.00	\$0.00	\$0.
	LIQUID PENETRANT INSPECTION AS PER QSI 038 OR LPI AS PER ASTM 1417 LEVEL 2						
	125609		11/14/2014		1.00	\$208.33	\$208.
			11/14/2014				
	<b>Line Total:</b>						<b>\$208.</b>

**Note:**

11/14/2014





# skyservice Work Order Traveler

Sky Service F.B.O. Inc.

DOT APP 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO22745	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: 26513
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: <b>UNSCHEDULED</b>			Sequence: 1

## Work Required:

CARRY OUT NDT INSPECTION (LIQUID PENETRANT) ON 3 CROSSTUBES

ITEM ID: D212-664-201 AFT CROSSTUBE - HIGH  
1 - WORK ORDER ID#: 124058

ITEM ID: D407-667-205PHI AFT CROSSTUBE - HIGH 407  
2 - WORK ORDER ID#: 125609

ITEM ID: D407-667-105PHI FWD CROSSTUBE - HIGH 407  
3 - WORK ORDER ID#: 125608

8014-11-14

Action Taken:						Date:	Initial/Stamp:
LIQUID PENETRANT INSPECTION CARRIED OUT ON ITEMS LISTED ABOVE (ITEMS 1-3) AS PER ASTM1417M-13						NOV 14 2014	
NO CRACK FOUND							
Pen: ZL-56 BATCH# 09H094 EXP. DATE: AUG 2014, DEV: SKD-S2 EXP. DATE: OCT2017 CLEANER: SKC-S EXP. DATE: APR 2018							
Description	Location	P/N	Qty	Batch	S/N Off	S/N On	

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature:		ACA/SCA Stamp 	Date: NOV 14 2014
Name:			

ANTONINO MARCHETTA

Work Order ID 125608

\*125608\*

Page 1

October-17-14 10:17:26 AM

Item ID: D407-667-105PHI

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: Fwd Crosstube - High 407

Start Date: 10/16/14 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 11/07/14 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals:

Process Plan: 

Date:

Tooling:

Date:

Run Start \*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D407-667-145

Rev C (DEO)

DSI9565

A

DSI9628

A

100

Document Control

0.00

\*100\*

DOCUMENT CONTROL

DC

Memo

0.00

Doc.Control -USB or Paperwork

Photocopy bluefile and create labels as per PPP D407-667-105 CHG005

110

0.00

\*110\*


Packaging

Packaging

Memo

0.00

Packaging

 10-15-12